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HOME COURSE IN SCIENTIFIC AGRICULTURE

ELEVENTH ARTICLE. FEEDING FARM ANI- MALS, NO. 1.

By E. W. ALLEN, Assistant Director of
the Office of Experiment Stations,
United States Department
of Agriculture.

THE feeding of farm animals, like the use of fertilizers for crops, rests upon quite well defined general principles. The materials of the body are continually breaking down and being consumed, and to keep the animal in a healthy and vigorous condition there must be a constant supply of new material. If, in addition to repairing the wastes of the system and furnishing it with heat and energy, growth is to be made (as in the case of immature animals) or milk secreted an additional supply of food is required. To supply food in the right proportion to meet the various requirements of the animal without a waste of food nutrients consti-

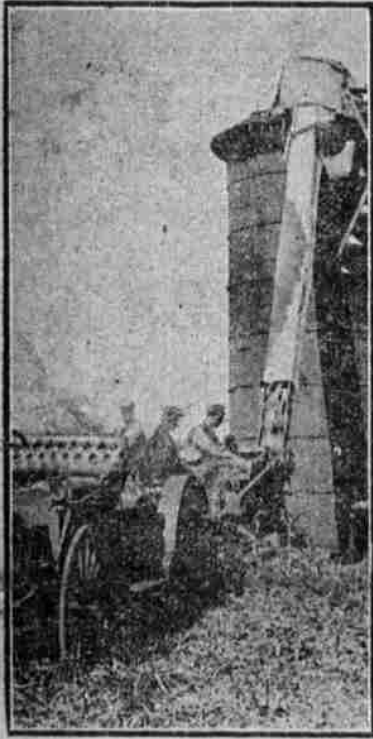


Photo by Long Island experiment station.
MOTOR FARM WAGON FILLING THE HIL.

tutes scientific feeding. It is by carefully studying the composition of feeding stuffs, the proportion in which they are digested by different animals and under different conditions and the requirement of animals for the various food nutrients when at rest, at work, giving milk, producing wool, mutton, beef, pork, etc., that the principles of feeding have been worked out. In applying these principles in practice the cost and special adaptations of different feeding stuffs must of course be taken into account.

The animal body is made up mainly of four classes of substance—water, ash or mineral ingredients, fat and nitrogenous materials. Water constitutes from 40 to 60 per cent of the body and is an essential part. From 2 to 5 per cent of the weight of the body is ash. This occurs mainly in the bones. The fat varies greatly with the condition of the animal, but seldom falls below 6 per cent or rises above 30 per cent. The nitrogenous material or protein includes all of the materials containing nitrogen. All those outside this group are nitrogen free, or non-nitrogenous. Nitrogen occurs in plants and animals in various compounds grouped under the general name of protein. The flesh, skin, bones, muscles, internal organs, brain and nerves—in short, all of the working machinery of the body—are composed very largely of protein. The albuminoids are a class of compounds included under protein.

The food of herbivorous animals contains the same four groups of substances found in the body—viz, water, ash, protein (nitrogenous materials) and fat and, in addition to these, a class of materials called carbohydrates, defined below.

However dry a feeding stuff may appear to be, it always contains a considerable amount of water. The amount may be only from eight to fifteen pounds per 100 pounds of material, as in hay, straw or grain, but in green corn fodder and silage it amounts to nearly eighty pounds and in some roots to ninety pounds. This water, although it may add to the palatability of a food, is of no more benefit to the animal than water which it drinks.

Ash is what is left when the combustible part of a feeding stuff is burned away. It consists chiefly of lime, magnesia, potash, soda, iron, chlorine and carbonic sulphuric and phosphoric acids and is used largely in making bones. From the ash constituents of the food the digestive organs of the animal select those which the animal needs, and the rest is voided in the manure. As a general rule, rations composed of a variety of nutritious foods contain sufficient ash to supply the requirements of the body. Corn, however, is poor in ash, and when fed extensively to growing animals, like pigs, it may be necessary to add to it

some ash material, as wood ashes, charcoal or bone meal.

Fat or the material which in analysis is dissolved from a feeding stuff by ether includes, besides real fats, wax, the green coloring matter of plants, etc. For this reason the ether extract is usually designated crude fat. The fat of food is either stored up in the body as fat or burned to furnish heat and energy.

Carbohydrates are usually divided into two groups: (1) nitrogen free extract, including starch, sugar, gums and the like, and (2) cellulose or fiber, the essential constituent of the walls of vegetable cells. Cotton fiber and wood pulp are nearly pure cellulose. Coarse fodders, like hay and straw, contain a large proportion of fiber, while most grains contain little fiber, but are rich in starch, sugar, etc. (nitrogen free extract). The carbohydrates form the largest part of all vegetable foods. They are not permanently stored up as such in the animal body, but are either stored up as fat or burned in the system to produce heat and energy. They are one of the principal sources of animal fat.

Protein (or nitrogenous materials) is the name of a group of materials containing nitrogen. Protein materials are often designated as "flesh formers," because they furnish the materials for the lean flesh, but they also enter largely into the composition of blood, skin, muscles, tendons, nerves, hair, horns, wool, the casein and albumen of milk, etc. For the formation of these materials protein is absolutely indispensable. No substances free from nitrogen can be worked over into protein or fill the place of protein. Under certain conditions it is believed protein may be a source of fat in the body, and finally it may be burned, like the carbohydrates and fat, yielding heat and energy.

The value of the fat for producing heat is nearly two and a half times that of carbohydrates or protein. The sources of fat in the body are the fat, carbohydrates and probably the protein of the food, and the exclusive source of protein in the body is the protein in the food. These groups of food materials are termed nutrients. To a certain extent at least the nutrients may replace one another, although, as stated above, no other nutrient can take the place of protein. The fat and carbohydrates perform similar functions, and, to a large extent, carbohydrate materials may replace fat in the food, even when a large fat production is demanded of the animal, as in the case of the cow.

The composition of feeding stuffs, or the proportion in which the nutrients occur, is determined by chemical analysis. Only a portion of the nutrients is of direct use to the animal—i. e., only that digested. A part of the food is dissolved and otherwise altered by the juices of the mouth, stomach and intestines absorbed from the alimentary canal, and in the form of chyle passes into the blood and finally serves to nourish and sustain the body. The other portion is excreted.

As the rates of digestibility are not constant for different foods and as only the digestible portion is of any nutritive use to the animal, it is essential to know in the case of each feeding stuff what part of its protein, fat and carbohydrates (the total quantity of which is shown by analysis) is actually digested by the animal. This is determined by digestion experiments with animals, and to secure approximately accurate figures the trials are repeated with a large number of animals and under various conditions. The digestibility of such coarse fodders as straw, coarse hay, etc., is relatively low. The digestibility, like the composition, varies somewhat for the same kind of feeding stuff grown under different conditions and fed to different animals.

Calculations have been made of the amounts of digestible protein, fat and carbohydrates contained in 100 pounds each of a large number of more commonly used feeding stuffs. They are the figures which the farmer has to consult to find the approximate food value of a material in selecting his feeding stuffs or making up a ration. They are available in various publications, including those of the United States department of agriculture.

For example, in 100 pounds of green corn fodder with an average amount of dry matter (27.7 pounds) there are approximately 1.10 pounds of digestible protein (materials containing nitrogen), 12.8 pounds of digestible carbohydrates (starch, sugar, fiber, etc.) and 0.37 pounds of digestible fat, and these materials when consumed in the body will yield 26,076 calories, or units, of heat, furnishing energy for work and bodily heat.

An ox standing in the stall requires less food nutrients than one which is worked hard every day. In standing in the stall it still requires some protein, fat and carbohydrates to perform the necessary functions of the body to maintain heat in winter, to grow a new coat of hair, etc. But if it is fed the same ration as when working hard the tendency is to get fat or waste the food.

The cow requires not only materials for maintenance, but must also have protein, fat and carbohydrates to make milk from. The milk contains water, fat, protein (casein, or curd), sugar and ash, and these are all made from the constituents of the food. If insufficient protein, fat and carbohydrates are contained in the food given her the cow supplies this deficiency for a time by drawing on her own body and gradually begins to shrink in quantity or quality of milk, or both. The stony feed cheats himself as well as the cow. She may suffer from hunger, although her belly is full of swale hay, but she also becomes poor and does not yield the milk and butter she should.

FOURTHCLASS POSTMASTERS.

Have Their Questions Answered
Here About Examinations.

Washington, May 27—The mail of nearly every member of Congress is being clogged with requests for information relative to the filling of fourth-class post offices. Here is the information most sought.

Q. What was the Taft order pertaining to 4th class postmasters? A. It was an executive order made on Oct. 15, '12 placing all fourth-class postmasters under Civil Service without an examination.

Q. What was the effect of this order? A. It meant each fourth-class postmaster in the U. S. than in office would hold office indefinitely regardless of his fitness or qualifications, vacancies of course to be filled based on a competitive examination.

Q. Wherein was this order unfair? A. It put postmasters under Civil Service who have received their appointment by virtue of political considerations and took no account of merit whatsoever.

Q. What is the "Wilson Way"? A. President Wilson, on May 7, 1913, issued an executive order, amending the Taft order, which provides that all 4th class post offices where the compensation is \$180 per year or over, there shall be held an open competitive examination by the Civil Service Commission the result of which shall be certified by the Commission to the Postmaster General. The Postmaster General shall appoint one of the three receiving the highest rating.

Q. How are they appointed when the compensation is under \$180? A. By the Postmaster General based upon a report made by a post office inspector.

Q. Who holds these examinations? A. Local examining boards are appointed by the Civil Service Commission to conduct the examination.

Q. When will these examinations be held? A. It is impossible to tell at this time; but they will be held as soon as the Department can take care of the work, and as the service requires.

Q. Where are examinations held? A. At the most convenient point.

Q. How does one make application for examination? A. After an examination is announced the applicant secures upon request, at the local post office, form 1753, which is the proper blank to be filled out and which contains full information pertaining to the examination.

Q. What is the nature of the examination? A. It covers elementary, arithmetic, penmanship, letter writing, copy tests, together with statement as to facilities for transacting the business of the office.

Q. How can one get more complete information pertaining to this matter? A. By writing to the "CIVIL SERVICE COMMISSION, WASHINGTON, D. C.," asking for copies of form 1752 and 1759, which contain instructions to applicants and rules and regulations governing appointments, or by writing your Member of Congress.

Col. Stuart Here.

Col. T. G. Stuart, of Winchester, arrived in the city Wednesday of last week on business but on Thursday he received a telegram saying that his brother John H., of Frankfort, had died suddenly at Dawson Springs. John H. Stewart was one of the best known newspaper men in Kentucky and the news of his death came as a shock, not only to his brother but to many others who knew him personally or by reputation. Col. Stuart left at once, upon the receipt of the sad news, for Frankfort, where the remains were laid to rest the latter part of the week.

A Card.

To the Voters of Morgan County: Owing to the false report made over the county that I would not be in the race for the nomination for Sheriff, on account of the illness of my wife, I wish to say to the good people of this county that I am in the race to stay. I do not feel that the people of this county will throw me down on account of sickness in my family. I want to assure my friends that whatever private loss I may suffer, not only will my name appear on the ballot in the coming primary, but it is my firm conviction that the people will have a chance to vote for me for Sheriff in November.

Thanking my many friends for their loyalty, and my opponents for their courtesy while I have been unable to get out, I am
Gratefully yours,
L. A. LYKINS.

Allen Predicts Tariff Approval.

Congressman Alfred G. Allen, of the Second District, returned to Cincinnati from Washington late Friday, to remain 10 days. Congressman Allen has re-established his family in their home on Price Hill.

"President Wilson has proved himself a great leader," said Allen Saturday. "He has accomplished more with less friction than any of his predecessors. His actions inspire confidence."

Allen predicted the passage of the Underwood Tariff Bill.

"There will be no banking legislation passed at the special session," predicted Congressman Allen, "although some bill will be presented."

Allen said he expected the appointment of A. C. Gilligan as Internal Revenue Collector in Cincinnati.

Wilson Receives Black Hand Note.

Youngstown, O., June 7.—Giuseppe Pomaro, steel worker, was arrested here today on the charge of having written President Wilson a Black Hand letter demanding \$5,000. The arrest was made by John Washer, U. S. secret service agent. Pomaro denies his guilt.

The letter was received by the President several days ago. Underneath the signature was drawn a big Black Hand. While the letter contained no direct threat, it instructed the President to immediately deposit the sum of \$5,000 to Pomaro's credit at an Italian bank here.

According to Washer, Pomaro has visited the bank several times during the last week acting as though he expected some communication.

Misses Chair, Aged Woman Badly Hurt.

Mt. Sterling, Ky., June 7.—Missing the chair in attempting to sit down Saturday, Mrs. Matilda Wood, 81, wife of former Pension Agent, A. T. Wood, fell heavily to the floor, and her right hip was broken. The accident happened at the country home of her daughter, and Mrs. Wood was brought to her home here. She is seriously hurt.

Buffalo Bill III.

Knoxville, Tenn., June 7.—Col. W. F. Cody, known around the world as Buffalo Bill, is seriously ill at the home of a Knoxville relative, C. O. Ward.

Col. Cody did not appear in his show here Friday night, the tenth time he had missed during 40 years spent in the circus ring. He expects to go to Atlanta Sunday with his show.

U. C. T. Meeting.

The United Commercial Travelers, from Kentucky, Virginia, West Virginia and Maryland held a rousing meeting in Lexington last week. Major Cassidy handed over the keys of the city to the knights of the grip and everybody in Lexington knew that the U. C. T.'s were in town.

Two More Producers.

Two more oil wells were drilled in at Cannel City last week. We have been unable to get first hand information but from the best reports the Sebastian well is one of the best yet struck in the Cannel City field. The Jones well doesn't show up quiet so well but it is a producer and it is thought that after it is shot it will be equal to the best.

Work is progressing nicely on the Carter well just out of town. Drilling will begin on the Sturdivent well as soon as the derrick is completed.

State to Run Health Car.

At the meeting June 4th of the Kentucky Tuberculosis Commission final arrangements were made for taking over the Health Exhibit Car, which was run to a great many towns in the State a year ago. The car is now being altered and a new exhibit installed. In the course of ten days the car will start on another trip thru Kentucky. The Commission hopes to keep the car on the road, at least, two years, and reach, if possible, all the available points in the State.

A committee of three was appointed to meet at the Capitol Monday, and engage one or more representatives to travel with the car and explain the exhibit.

Local and Personal.

D. G. Lacy, of Caney, was in town Monday on business.

D. M. Murphy, of Maytown, was here on business Monday.

W. G. Bair made a business trip to Lexington last week.

Miss Ada Bailey, of Lakin, Kas., is visiting relatives in town.

J. T. Wells, of Cannel City, attended County Court Monday.

A. J. Loden, of Insko, was here Monday attending County Court.

Jno. M. Sebastian, of Williams, transacted business in town Monday.

R. H. Ferguson, of Dingus, attended County Court here Monday.

French May, of Henry, was mixing with the people in town Monday.

Henry McClure, of DeHart, attended County Court here Monday.

Dr. B. F. Carter was at Louisville last week on professional business.

Rolla Cecil, of Grassy Creek, transacted business here first of the week.

J. W. Perry, of Yocum, visited his daughter, Mrs. R. M. Oakley, Monday.

Rainey Hamilton, of Silver Hill, was a business visitor in town Monday.

R. V. W. H. Loden, of Insko, was here Monday attending County Court.

B. J. Elam, of Salyersville, transacted business in the city first of the week.

Ben Kennard and J. W. Coffee, of Logville, attended County Court Monday.

S. D. Goodwin, of Ezel, was in town Monday shaking hands with the voters.

Alex Whitaker, of Caney, was here Monday extending the glad hand to his friends.

Smith McGuire, of Flores, was a patron of our job department while in town Monday.

Misses Orange and Martha Oakley are visiting relatives at Bangor and Morehead this week.

Uncle Johnson Oakley, of Grassy Creek, was here Monday shaking hands with his many friends.

Misses Lucile and Elizabeth Pieratt, who have been in school at Millersburg the past year have come home for vacation.

T. H. Johnston, Forest, candidate for Justice of the Peace for the 6th district, was in town Monday and gave an order for cards announcing his candidacy.

Born, Monday morning, June 9, to Mr. and Mrs. Ren F. Nickell, a girl—Margaret Naomi. The baby is named for her aunt Margaret Carter and great aunt, Mrs. Nettie Naomi Carter.

Mr. and Mrs. John M. Cottle entertained a few friends Saturday evening with an excellent supper. The guests were Mrs. Will Reed, Misses Aura Maxey and Grace Reed and S. M. R. Hart.

Miss Cleo Bays entertained the following young people with a supper one day last week: Miss Lula Prayter and Mr. Hermon Prayter, of Salyersville, Misses Aura Maxey, Dewey Swango, Hazel, Ina and Fern Cottle, and Miss Ida Wells, of town.

The latest report from the bedside of Mrs. W. M. Kendall, who is in St. Joseph Infirmary at Louisville, is that her condition is very serious and that she is not expected to survive many days.

LATER—Just before going to press we learned that Mrs. Kendall had died at two o'clock Wednesday morning.

An Invitation

You are cordially invited to come to my store (Lykins' old stand) and trade. I have a complete line of Groceries and Provisions, Notions, Candies and Cakes. My prices are the lowest. Call and see.

ICE CREAM AND COLD DRINKS

Delicious and Refreshing, served at all times. Try my Soda Fountain Drinks.

HENRY COLE,

Main Street. Opposite Commercial Bank.

COMING, COMING To West Liberty Saturday, June 14 For One Day Only



ONE OF THE GREATEST SHOWS OF ITS KIND ON EARTH—

200 MEN, WOMEN, CHILDREN, HORSES, 200
Beautiful Shetland Ponies, Elephants, Camels, 200

A Troupe of Highly Educated Dogs and Ponies

The Best Performing Elephants on Earth

10 OF AMERICA'S FUNNIEST OF 10
ALL FUNNY CLOWNS

20 OF THE VERY BEST PER-
FORMERS IN ALL KINDS
OF GOOD ACTS

SEE THE ONLY
EDUCATED LLAMA
IN THE WORLD, With This Show

MISS LENOIR
Europe's Greatest Contortionist With This Show

12 Cages of Rare Wild Animals also
LARGEST LION ON EARTH

A Golden, Glittering, Free Street
Parade Each Day at 12:30

A Big Grand Free Exhibition Right
After Parade Each Day.

2 PERFORMANCES DAILY 2

A 2 and 8 o'clock P. M.

Grassy Creek, June 13

The work of laying the foundation for the Methodist church is progressing rapidly under the supervision of the contractor, George Ellington, and the members hope to see the building completed this summer.

J. W. Davis, of Ezel, was in town Monday attending County Court and shaking hands with his many friends, and while here called on the Courier crew and gave us a nice order for job work.

Prof. and Mrs. Noah Cisco are visiting in the country this week. They will leave next week for Davenport, Okla., where Prof. Cisco will be principal of the school next term.

H. C. Combs, candidate for jailer, gave us an order for cards this week. The candidates in this county nearly all realize the value of printer's ink.

During the busy season for the farmers, when trade is dull, is the time to do your best advertising. Keep your business constantly before the people.

No such activity among candidates and prospective candidates was ever seen in West Liberty as was evidenced here at County Court Monday.

Don't send out your correspondence on cheap paper, badly printed. Let us make you some real "classy" stationery.

Henry Cole is back in business at his old stand, and your attention is called to his attractive ad in this issue.

D. M. Cox, of Moon, was in town on business Monday.

W. B. Barker, of Ebon, was in town on business Monday.

Capt. B. M. Carr, of Lexington, is visiting friends and relatives in the county.

Mr. and Mrs. J. H. Fraley have gone to housekeeping in the James Lacy property.

Clint McCall, of Bellevue, Pa., was here last week with a view of making some investments.

Grant Bays is the champion fisherman of the town, his catch for the past month being nearly a hundred good ones.

We wish to announce through the columns of the Courier that we will have special prices on pianos and organs closing July 1st 1913. While we will sell the best piano made at 25 per cent below the jobbers price of same grade for every cash sale made before July 1st. We will give a present of \$15.00 in fine jewelry to be selected by the purchaser and \$5.00 with each cash sale of organ. Our prices of high grade pianos are as low as \$185.00 and high grade Hamilton organs as low as \$15.00. Watches, clocks and jewelry neatly and accurately done. Hoping to receive frequent orders which shall have an careful attention. We are yours for business and to please.

The J. T. FAYEN Music & Jewelry Co. Philville, Ky.